The Boston Medical and Surgical Journal

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February 10, 1921

NEW ENGLAND SURGICAL SOCIETY

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New England Surgical Society

THE INDUSTRIAL QUESTION: A PROPOSAL AND ANNOUNCEMENT.*

BY FREDERIC J. COTTON, M.D., BOSTON.

JUST a few things the war has taught us that should help forward our civil practice: the Carrel-Dakin treatment of septic wounds, the value of organized team work, the possibilities of the reconstruction idea.

The Dakin treatment we may leave aside, already safely ensconced in all the hospitals that really care about results.

My subject for today is that combination of reconstruction with the team work which alone can give it tangible results. Such a development, such a combination we had during the war—and with results, as you all know. In peace we have lost it!

Worst of all, I know of no civil hospital that has clearly seized the idea or even attempted the practical solution. Nor does it seem to me likely that any general community hospital is going to do it.

What we lack is what Governor Coolidge asked for in June, 1919,—care for civil cases such as the army wounded had.

The class of cases treated during the war were mainly battle cases; in peace we have the results of very varied accidents, mainly less serious, but the needed personnel, the general conception of treatment for return to function, the most favorable grouping of cases, are very nearly the same for accident cases as they were for the reconstruction work in the army.

Moreover, since we have had accident insurance laws in our states these cases form a definite class—potentially at least, a group as definite as the army cases.

It is with the army work in mind—the army work at its best—that I am going to give a brief sketch of the industrial surgical situation, based on an observation of some years and particularly in the eight years' life of our Massachusetts employers' liability law.

During these eight years I chance to have been surgeon to the City Hospital, chairman of the medical advisory committee of the accident board, and sometimes "impartial examiner" for the board and referee for certain insurers in the less happy cases—in whom late reconstruction work is to be considered.

All this means some acquaintance with results, particularly, of course,— the bad results.

They seem to leave a good deal to be desired and there seems to be an enormous economic and human waste involved in the total, because of faulty methods.

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*Read before the New England Surgical Association, Oct. 7, 1920.

Roughly speaking, the waste results from: lack of technique—and sepsis, mostly avoidable; lack of diagnosis of detail, particularly in fractures; inadequate primary surgery, particularly in fractures; in nerve and tendon injuries; lack of after-care, or routine after-care only; lack of coöperation of the patient; lack of review of cases that are "hanging along"; lack of knowledge of what can be done—late—by proper reconstructional surgery; lack of opportunity to get such work done; lack of means for bridging over the interval between technical cure and the power to do real work; lack of refitting of the handicapped to the old or to a new job.

Our cases are treated by their own doctors, or in general hospitals, and latterly many of them in clinics and hospitals run by insurance companies or in connection with factories.

Each of these methods at its best yields a good many good results—depending largely on the man who has the case. I am here speaking of averages only.

The least good average of results, I am afraid, comes from the hospitals, particularly the bigger ones, organized essentially for acute surgery, practising more particularly abdominal surgery, large enough so that much work falls to overworked and inexperienced juniors, so large that after-care is in too many hands with no one continuously in charge of the case. Moreover, these institutions all think they are charities—as a few of them are—and there is a feeling that industrial cases should pay their way nowadays,—as they should—that makes for lack of real interest in them. I am not very optimisitc about developments in the larger institutions.

The smaller community hospitals do better, but there are few of them fully qualified for this work in equipment or personnel.

As to the private physician he does surprisingly well, all things considered. I don't see, quite, how he does it with his average disadvantages as to equipment and help. The answer is, I think, that he is vitally interested in the case in hand and does a bit better than his best.

Now as to company hospitals: they have one very great advantage, in that they are specialized for this work—just as the general hospital is not.

The clinic or hospital run by an insurance company may be very good—several of them are—but they are handicapped first, by a partisan attitude of their own workers; second, by lack of coöperation of their patients from a suspicion, usually not justified, as to the company's lack of interest in the case from the personal side. This, I am inclined to regard as serious enough to affect results appreciably.

Beyond this these clinics are usually swamped with routine cases, mainly minor, and a good many serious cases get by for a long time without needed review by really expert men.

The plant hospital is better off in all these respects, particularly in the matter of morale on both sides. In fact the best work that I know of has been done in hospitals of the larger plants affiliated with good local hospitals that take the more serious cases in.

The Fore River plant, the American Steel Wire in Worcester, the Norton File Co., the Waltham Watch Factory, all work on this basis.

This is the most hopeful type of organization, possessing as it does the advantage of close touch with the employee and his work and with a chance to do intelligent placement in convalescence much earlier than on any other plan, and an opportunity to do retraining and refitting when it is needed.

In New England unfortunately most plants are too small to carry a really adequate equipment and personnel.

What can be done to better the chances of the injured employee of a small concern or the man who wants his own doctor? I have for a good while advocated two things:

1. Systematic review of all cases on compensation over a few weeks to see what needs doing and whether it is being done.
2. An arrangement by which serious cases needing expert care can be referred easily, so as to get such care, whether they are under the care of their own doctor, or of the company doctor or the insurance company.

The proposition for a systematic review of all cases after six or eight weeks, has been put up to the accident board in Massachusetts as a substitute for the present system of not very valuable impartial examinations very late along in the course of contested cases.

There are legal and administrative difficulties at the moment, but I believe we shall get this in time if we continue to ask for it.

The second need is for a place and institution devoted, not to routine accident stuff, but to the problem of functional restoration in the individual referred case, whether this calls for sheer surgery or no surgery or medical care or combined treatment. That includes physiotherapy and some measure of occupational work.

I recognize that a lot of good work has been done by individual men along these lines on cases referred to them—I have done some myself.

What is needed is an institution to do this, big enough to have the services of the best experts in surgery and medicine in various branches, to have a team of skilled physiotherapy aides and technicians, adequate physical equipment, a proper record system.

This cannot be built in a day, but a beginning is being made. A charter has lately been issued to a corporation called the Reconstruction Association, to begin just this thing—with small beginnings, beginning small, to grow on merits, if it proves to have them, rather than to risk the entangling alliances likely if some man or corporation were to finance.

This corporation now stands ready to take cases calling for expert treatment along reconstruction lines at, practically, cost rates and give them the best treatment that can be offered; building up its force and its resources as it grows. In this plan a number of men and women who were in the war work are interested —the plan is for development along lines of the army reconstruction team work.

With the men associated in putting this thing through, ready to do the work without personal gain, there is going to be no financial or other difficulty in developing it, provided sufficient cases are furnished to get to work on.

We have never found insurers, as a rule, unwilling to pay for real results, and we believe savings from shortened periods of disability will be so obvious as to clear up the dollar question if the thing can only be gotten under way.

It is the same sort of thing half a dozen men have been doing in private and have found well worth while.

This is an attempt to make it non-personal, independent, non-partisan, to build it up to size enough to keep first class teams busy, and so to concentrate the work, reducing overhead charges per case in so doing, and to have a really efficient, specialized central institution body to which cases needing reconstruction treatment may be referred from whatever source.

If this works out there should cease to be any excuse for many of the results (or lack of results) that some of us have seen so often in the past, and a saving in human efficiency as well as an economic saving well worth while.

ACUTE INFECTIONS OF THE PANCREAS.

By F. B. Sweet, M.D., Springfield, Mass.

It is well for the surgeon to occasionally look behind him, take inventory and frankly review his professional experience. Such a survey of one's work on the one hand, exposes pitfalls and fallacies, to be in future avoided, and on the other, brings the cheerful realization that many an erstwhile insurmountable barrier was such by reason of tradition only. For, however much humiliation and disillusion the backward look may bring, one gains the compensating conviction that surgery is a forward looking calling, and its practitioners progressive men.

The surgical conquests of the past two decades in themselves, present an almost incredible record of achievement. Many remember the apprehension with which disease of the vermiform appendix was surgically attacked, to say nothing of such abdominal emergencies as ectopic gestation, biliary tract infection and perforation of the digestive tube. Year by year, one pathological entity after another has been sought out and controlled, until but comparatively few regions of the body remained unexplored and but few surgical diseases unattacked.

Let us briefly discuss one of the later triumphs: the surgical treatment of pancreatic infection. The anatomical relation and physiological importance of the pancreas, long prevented surgical interference. Its physiology was but indifferently understood and its proximity to important viscera and structures presented serious technical problems. Its blood, nerve and lymphatic supply is most generous and from several sources. It produces an external and an internal secretion. These facts explain why disease of the gland is complex in symptomatology and secondary to that of neighboring structures, particularly the gall-bladder. They also explain why the surgical treatment of its diseases presents so formidable a problem.

As a necessary foundation to the intelligent discussion of the subject of acute pancreatic infection, let us briefly review the very interesting studies made recently in the research laboratories of the University of Pennsylvania by Dr. J. E. Sweet.

These studies have greatly added to our knowledge of the pancreas and have been of aid in showing the reason for and a rational method of surgical attack. Sweet aptly says, "the manner of attacking any form of pancreatic disease is to be determined by a knowledge of certain of its physiological peculiarities."

As to the nature of the peculiarities, I cannot better convey the facts than by freely quoting from his recently published monograph.

1. "Pancreatic secretory activity is subject to dual control, namely through the nervous system, the rôle of which is not fully understood, and a more potent agent in the form of a chemical stimulant brought to the cells of the gland by the blood stream, from its place of origin in the intestinal mucosa. This substance called secretin, is formed by the action of hydrochloric acid upon a substance called prosecretin, contained in the cells of the mucosa of the duodenum and entire jejunum. When secretin is brought to the pancreas by the blood stream the pancreas immediately begins to secrete.

2. "The surgically important constituents of the pancreatic juice are the ferments trypsin and steapsin, the first, a proteolytic ferment and the second, a fat splitting agent. This latter gives a positive diagnostic sign in acute pancreatitis when the juice escapes into the peritoneal cavity where it comes in contact with fat and forms characteristic patches of fat necrosis seen in no other condition. While fat necrosis is the only infallible diagnostic sign, outside the pancreas itself, it is not always present. Trypsin is the all important agent to the surgeon, being that which determines operation and modifies treatment as will be seen later. This ferment is not contained as a ferment either in the gland cells or ducts, but is found as an inactive zymogen trypsinogen. This is the answer to the old question why the pancreas does not digest itself. The normal activating agent which transforms the harmless trypsinogen into the powerful ferment trypsin, is produced exclusively by the cells of the mucosa of the small intestine, and is called enterokinase. This body is only secreted when trypsinogen is brought into the lumen of the intestine. This enterokinase is the only substance normally present in the body, which can change trypsinogen into trypsin. An activating agent of similar, if not identical nature, is present in certain bacteria, and there is evidence that trypsinogen is also activated by some constituent of the pancreas itself, when it has been so injured as to become necrotic."

So much for the theoretical study of our subject,—now for the practical application of what has thus been learned, for after all, the cure of the patient is the ultimate goal of researchers and clinicians alike.

First, the Diagnosis.

Experience has taught us all that the symptoms of acute pancreatitis are those of upper abdominal peritonitis. They so closely simulate those of perforation of the gall-bladder, duodenum, stomach, high obstruction acute cholecystitis, that it is quite impossible to make a correct pre-operative diagnosis. In discussing the diagnosis, William Mayo catalogues the disease as an acute abdominal perforation, which in truth it is.

In the one or two cases, where I have personally made correct diagnoses, I have been prompted to guess aright by the extreme ill appearance and grave condition of the patient, rather than by intelligent reasoning. The finding of fat necrosis or free dirty or bloody fluid with palpable disease of the gland at operation, remains as ever the only sure method of diagnosis. Laboratory tests are unreliable. The almost constant association of gall-bladder disease in itself, hopelessly confuses the clinical picture. The difficulty of diagnosis and the profound illness of the patient, have always militated against prompt and bold treatment. In this condition, as perhaps in no other abdominal emergency, both diagnosis and successful treatment depend upon early operation and the provision of a means of exit, for both the infectious product and the deadly agent it has let loose.

The mortality statistics of promptly operated cases are most encouraging, and give reason for the hope that in the near future, acute pancreatitis will show as high percentage of recovery as do the more severe appendix infections. In the neglected cases, the mortality is and will be appalling. The unoperated cases practically all die.

The surgical approach should be through either the gastro-hepatic or the gastro-colic omentum. Drainage material should be ample and well placed. The coincident gall bladder disease must be appropriately dealt with.

Pancreatic patients have a more or less stormy post-operative history. At best, attacks of epigastric distress and vomiting are not infrequent, and sometimes continue periodically for two or three weeks. The worst cases slough out part of the gland.

The functional margin of safety is undoubtedly great and is estimated by Sweet as two-thirds of the gland substance. In one of my cases it seemed as if most of the gland came away, but the patient suffered no ill effect.

The foregoing, with the following case reports, will I hope, stimulate discussion and help to convince the skeptical that acute pancreatitis, if diagnosed and treated early by operation, is not as hopeless a surgical condition as we have hitherto considered it.

The following six cases are all of true acute pancreatitis, of which I have personal recollection or records:

Mrs. S. Age, 40. 1913. Seen the second day of illness. Was then in semi-collapse. Great pain in upper abdomen, with tenderness and board-like rigidity in same region. No jaundice, but peculiar leaden pallor that I have since noticed in one or two other cases. She vomited frequently. Patient sent to hospital, but operation delayed two days because I lacked the courage to operate in her very ill condition.

The gall-bladder was found acutely inflamed and contained stones. There was widespread fat necrosis. There was gangrene about the head of the pancreas and bile poured out of Winslow's foramen. Gall-bladder was drained and large handkerchief wick carried down to neighborhood of pancreas head above duodenum. Lesser cavity not opened. Stormy recovery, repeated chills, septic temperature, vomiting and attacks of epigastric pain.

About three weeks after operation, as I entered ward one morning, I noticed a most stinking odor and was informed by an excited nurse that Mrs. S. had just flooded her dressings with pus. Investigation showed a very large portion of her pancreas lying beneath her dressings in a soapy, gangrenous mass. She thereupon made prompt recovery, but had pancreatic fistula for some months. This finally closed and she has since been well. This case illustrates a happy result in spite of neglect and late operation. It also lends weight to Mayo and Sweet's contention that the functional margin of safety of the gland is great.

Mrs. B. Age, 65 plus. 1912. Had been ill for several days with indefinite but severe upper abdominal symptoms. When admitted to hospital, was delirious and feeble. There was a tumor in the epigastrium. No jaundice. Exploration showed great omentum wadded about pylorus and duodenum. When disentangled, a small abscess in head of pancreas was found. There was a stone in the gall-bladder. No fat necrosis. A large wick was carried into abscess cavity. The gall-bladder was not opened.

She made a stormy recovery and was finally discharged to her home with a discharging sinus. Some time later, Dr. Birnie was sent in response to a hurry call and found her afloat in stinking pus and soapy necrotic portion of pancreas. She made prompt recovery. This case probably illustrates the type in which the ferment is not activated and infection results in abscess only.

Mr. C. Age, 55. 1918. Patient was a paralytic and in feeble health. First seen at his home suffering with symptoms of mild cholecystitis.

Because of his chronic invalidism and the apparent lack of urgency of his abdominal symptoms, I advised against operation. When brought to hospital three days later, he was very ill with symptoms of upper abdominal peritonitis. He was jaundiced. Operation revealed acute cholecystitis with stone and acute pancreatitis with abscess. There was general fat necrosis. Abscess opened and drained. Died on fifth day.

Mr. R. Age, 51. Admitted 1918. For several years had had indigestion and during last few months had suffered repeated attacks of upper abdominal pain accompanied by vomiting. Present attack came on twenty hours before admission. Similar to other attacks, but more severe and accompanied by chills. When admitted to hospital was in very severe epigastric pain with rigidity and tenderness over right upper quadrant. Operation 24 hours after onset of attack showed inflamed gall-bladder containing numerous stones, general fat necrosis of peritoneum, considerable quantity of bloody fluid in peritoneal cavity and very odematous and highly inflamed pancreas. Gall-bladder drained, lesser peritoneal cavity opened and large drain carried down to pancreas. His recovery was smooth and uneventful, being in my experience unusual in this respect. He left the hospital with a healed wound and in good general condition on the 28th day. Has remained well since.

Mr. K. Age, 30. 1918. Has had attacks suggestive of gall-stone colic for past two years. The morning of admission, was seized with violent upper abdominal pain, accompanied by vomiting, rigidity and tenderness. Had peculiar pallor. Was not jaundiced.

Operation the same day showed acute cholecystitis with several stones, acute oedema about head of pancreas and gall ducts,—fat necrosis not present but some bloody fluid in peritoneal cavity. When lesser cavity was opened pancreas was found acutely inflamed, but not necrotic. Gall-bladder and pancreas drained. Pre-operative diagnosis—perforated ulcer or acute pancreatitis. He made a good recovery except for the usual persistent epigastric pain. There was some digestion of the wound surfaces, but no sloughing of the pancreas. The only complication was a transient lymphangitis of chest wall during fifth week of convalescence. He left the hospital in six weeks with wound healed and has remained well since.

Mrs. D. Age, 29. 1919. For past eight weeks, had attacks of severe pain in epigastrium, attacks lasting from six to twelve hours. They occurred about once in three days and required morphine for relief. Had a baby ten weeks old. Was jaundiced and said she had been since the birth of her child. Her symptoms were very indefinite the first day, but on the second, the jaundice became marked. Pain was constant and severe, with sharp upper rectus spasm and acute tenderness. Operation on the second day. Gall-bladder acutely inflamed. Many stones, free fluid, fat necrosis in region of pancreas, but not widespread. Pancreas odematous with gangrenous and hemorrhagic areas. Gall-bladder drained, lesser cavity was opened, gland broken into and large wick drain introduced. Her recovery was good, although on the 16th day her temperature rose and she suffered epigastric pain and vomited. There was no sloughing of pancreas. She remains well.

These cases are too few for statistical purposes, but certain interesting facts may be noted for what they are worth. All stressed epigastric pain; four of the six had fat necrosis; three had bloody or dirty fluid; two were jaundiced; three had leaden pallor; two only gave history of radiation of pain to right shoulder blade, a curious fact when we remember that all had definite gall-bladder disease with stone; all showed unmistakable gross change in pancreas; the three cases operated early made good if somewhat stormy recoveries; the three operated late, yielded one death and two prolonged and septic illnesses with recovery only after a considerable portion of the gland substance had sloughed away.

OBSERVATIONS ON SOME CASES OF PERINEAL PROSTATECTOMY.

By J. Dellinger Barney, M.D., F.A.C.S., Boston.

Chief, Genito-Urinary Service, Massachusetts General Hospital.

Although it is probable that a careful inquiry among urologists would show that the perineal operation for prostatectomy is largely taboo, there is no question but what it has its advocates. Experience is the best teacher and one should approach any question with an open mind. It was in this spirit that I became interested in perineal prostatectomy some years ago, and when my friend, Dr. F. G. Balch, sung its virtues so gracefully in his paper before the Boston Surgical Society in 1915 I was still further encouraged to acquire a first hand knowledge of the operation.

This paper is the study of a small series of cases, 34 in all, of perineal prostatectomy done by me since 1912. Owing to inadequate or unobtainable data I have not included, except under general impressions, several others which I have done. But these comparatively few cases have been sufficient to give me a fair picture of the operation and to bring out some of its possibilities and disadvantages. Although several of these cases proved to be cancerous, none was approached in the knowledge that this disease existed. They were taken at random among my patients as they presented themselves, all my other prostatectomies being operated by the suprapubic route, for the most part, in two stages.

My youngest patient was 41, the oldest 78, the average age being a little over 65 years. Their general condition was recorded as "good" in 21, "fair" in 6, distinctly "bad" in 7. The blood pressure varied greatly but was found to average just below 150 mm. systolic and just under 90 mm. diastolic.

Symptoms of prostatism had begun anywhere from a few months to 15 years before the patient sought relief. In eight the annoyance of one or two attacks of acute retention of urine brought them to a decision; on the other hand 13 had had more or less complete retention, and had derived greater or less comfort from the catheter for weeks, months, and in some cases, years, before deciding that there must be some better way out. In 20 cases there was marked frequency, both by day and by night; nine gave a definite history of hematuria. The urine was practically clear and contained but small amounts of albumen, leucocytes, blood cells and bacteria in 13 cases; in eight, the urine was in "fair" condition, while 11 patients passed a thick, foul ropy urine. Where the patient was not found to have complete retention with an over distended bladder (4 cases), the residual urine varied from two to twenty ounces, the majority having four or five ounces.

Rectal examination brought out some interesting points. In 23 the prostate was described as smooth, elastic and enlarged, the hypertrophy being well marked in some instances, and involving one or both lateral lobes. Judged by this standard alone none of these patients had cancer, yet in four of them, examination of the prostate by the pathologist or subsequent events showed that cancer was present. On the other hand, rectal examination of six cases showed a firm, more or less nodular prostate strongly suggestive of cancer, yet in two of these the pathologist and careful post-operative observation showed that my finger had erred in the other direction. It, therefore, follows that one cannot always eliminate the possibility of cancer in an apparently innocent feeling gland nor, unless the disease is well advanced and unmistakable, can one be sure he is dealing with cancer.

Cystoscopic examination of the bladder before operation was done in but 11 instances. In nine of these, definite and valuable information was obtained as regards the presence of diverticulum, stone, a large median lobe, or appearances suggesting malignancy. In at least two cases, subsequent events made me regret that this examination had not been performed. I, therefore, do not hesitate to state that if one is to do perineal prostatectomy, cystoscopy should always be done. It may add one more burden to the patient's load, but the information thus gained may be well worth while.

Preliminary catheter drainage was instituted in 24 patients. In four others the catheter could not be tolerated or could not be made to drain well after a few days. In these cases suprapubic cystotomy under local novocain anesthesia was performed, and kept up till the patient was in satisfactory condition. Drainage by this method alone was resorted to in one case. In none, did the opening of the bladder above complicate the subsequent perineal enucleation or the convalescence. Indeed after the removal of the prostate, and the establishment of free perineal drainage the suprapubic wound healed with the greatest speed and nicety. I, none the less, consider that if one is obliged to resort to suprapubic drainage it would be wiser to complete the operation through this wound as a two-stage affair, rather than plunge into fresh tissue a second time and in another situation.

While in four cases no drainage at all was carried out (these being early cases, with little or no residual and a repeatedly high function) this procedure lasted on an average of eleven days. Many were so treated for three to four weeks, and I believe, to their great advantage. The phenolsulphonephthalein test was relied upon as the best all-round guide to the *status quo,* although the old-fashioned, but still reliable clinical methods of estimating a patient's condition were by no means neglected. The functional test varied widely, both before and after drainage. The average for the series at the time of operation was 51% plus, the lowest being 15%, the highest between 80 and 100%.

Prostatectomy was performed under spinal anesthesia alone, in 21 cases. In all of these novocain (Tablet C) was used, there being no pain or even discomfort at any time during the operation. In five more cases this anesthetic was entirely successful until the final enucleation of an adherent lobe was reached and at this stage of the proceedings a few whiffs of ether (hardly enough to produce primary anesthesia) were given. In three other cases, for reasons as yet unexplained, the novocain produced no effect whatever. As spinal anesthesia is severely frowned upon by a number of surgeons, and in some localities is never used on account of its supposed dangers or evil results, it may be well to state that these 28 patients having spinal anesthesia showed no ill effects whatever from it. In most, it was administered by me, the rest being done by an anesthetist or by my assistant. Although it is not uncommon to find a more or less marked fall in blood pressure after spinal anesthesia, resulting sometimes in a definite and alarming symptom-complex, this phenomenon was not noted in this series. In one patient who averaged about 150 mm. before operation, the pressure rose to 210 mm. immediately before the anesthetic was given. After operation his blood pressure was again 150 mm. Another whose pressure was 155 mm. before, registered 135 mm. after operation. In the four or five other patients whose pressure was taken immediately after operation there was a correspondingly small drop. I think that this may be explained by the fact that the total volume of fluid injected into the spinal canal was small, never over 3 c.c., was never injected higher than the third lumbar interspace, and was always injected very slowly. The drug was thus diffused but a short distance into the spinal canal, not high enough to effect the splanchnic nerve plexus. While this technique may account for the insignificant changes in blood pressure after operation, it may also have been responsible for the incomplete anesthesia found in eight cases. Although I deplore the use of ether for prostatectomy it was used in four cases, the much safer gas-oxygen being employed twice.

My notes as to the findings at operation show some points of interest. The prostate was non-adherent and was shelled out with the utmost ease in 12 cases, all of these proving to be benign growths. Enucleation was equally easy and the report equally favorable in one which later turned out to be cancerous. Thirteen prostates are recorded as having been adherent and enucleated in some cases at least with much difficulty. Five of these were shown to be cancerous, but in eight instances the gland was benign. It, therefore, does not follow that adherence of the gland to its surroundings is a sure sign of cancer. It is remarkable that there was a total of six cases of cancer in this series, nearly one in six, a percentage of 18.8.

In my earlier cases the perineal incision was of the inverted U type, but latterly I have used a simple straight vertical incision with more satisfactory results. The apex of the U in the former incision does not heal quickly, or approximate itself to the rest of the wound; the straight incision gives all the room necessary, and its edges come together readily, leaving a small linear scar. Secondly, in my experience, the removal of stones, even up to the size of a pullet's egg, through the perineum, has been easily accomplished with the old-fashioned lithotomy forceps, or with a lithotrite, this procedure being generally carried out after enucleating the prostate. Thirdly, I have not yet encountered a prostate so large that it would not emerge through the wound after a little manipulation, nor have I yet been harassed by losing a loose lateral or median lobe in the bladder. My finger has been able to reach well into the bladder and to palpate readily the entire edge of the prostatic capsule after the enucleation.

I have always regarded the perineal operation as especially desirable because of its comparative freedom from hemorrhage. The records of 30 of my cases show that the bleeding during and just after operation was insignificant. In three others enucleation of the prostate was attended by sharp hemorrhage not ceasing spontaneously, and necessitating control. One was stopped by a single gauze pack; the other two were quickly and completely controlled by the Hagner bag. This was inserted deflated and bulb first into the bladder through the perineal wound. The bag was then inflated and downward traction made on the tube, the result being that the torn edges of mucosa were firmly and smoothly pressed against the sides of the prostatic cavity. In one case the bag was deflated about six hours after operation and removed next morning; in the other the bag was by accident left in place, fully inflated, for about 24 hours, yet the patient urinated freely and comfortably around it. While I find myself using this bag less and less in the suprapubic operation, it is a most efficient and certain method of controlling hemorrhage in the perineal operations. Packing a perineal wound with gauze is difficult and often futile for the reason, that the tighter one packs the gauze against the bleeding bladder neck, the more one pushes it upward, and the more one tears up the mucosa of the empty prostatic cavity.

Ordinarily a large single or two-way rubber tube was inserted into the bladder after the enucleation of the gland. This has been found to give ample drainage, not only to the bladder but to the prostatic cavity and the wound. The two rubber-tissue wicks, one on either side of the drainage tube. which I once used as a routine, have long since been omitted without ill effects. Indeed, I have often been tempted to omit even the tube in the belief that drainage would be adequate without it. Tubes and wicks have always been removed within 48 hours, more often on the morning of the day after operation. Complete incontinence usually ceased within three to five days after operation, the urine being then passed at short intervals through the perineal wound. Most patients began to urinate a greater or less amount through the penis in about a week, the perineal leakage continuing for ten days to two weeks longer, or until the wound healed.

There were no post-operative complications whatever, in 16 cases. In an equal number the convalescence was interrupted by some untoward incident. The most important was post-operative hemorrhage which occurred in four patients on the eleventh, tenth and eighth days, in three, and continued off and on for nine days after operation, in one. In two, it eventually stopped spontaneously; in the other two, a light gauze pack was required. In four other patients epididymitis (bilateral in one) intervened. The perineal wound closed down in two cases, producing retention of urine and eventually requiring suprapubic cystotomy. In both of these the prostate was malignant. Phlebitis, pneumonia, prevesical abscess, bronchitis, hemiplegia, chills and uremia, seven different complications, attacked nine other patients. A perineal sinus persisted for several weeks in one patient, largely owing to inadequate treatment in the institution where he was; in another, a sinus persisted off and on for nearly a year in spite of the best care I could give it.

There were three operative deaths, a mortality of 8.8%. One, a feeble old man, succumbed to the effects of a secondary hemorrhage occurring 48 hours after operation; another, equally old and feeble, gradually failed and died in the hospital several weeks later apparently of cardio-renal disease; the third died in uremic coma three or four days after operation, in spite of the fact that his phthalein test was 80% on two occasions and he was regarded as a very good risk.

My belief is that a successful operation for prostatectomy should result, first, in a live patient; second, in free and infrequent urination; third, in little or no residual urine, and fourth, in a restoration of health and comfort so far as the patient's age will permit. I have already stated that three patients died shortly after operation. The condition of 21 others from several months to several years after operation has been ascertained. Eleven of these fulfilled the conditions just named and are unquestionably brilliant results. The paths of ten others have been somewhat rough, even stony.

One proved to have a cancer of the prostate in spite of a "benign" report and was put on a catheter life with a suprapubic operation later.

One has never regained complete control, has to wear a rubber urinal day and night, and has a residual of one ounce.

Another went along well for a time until the suprapubic wound, through which his pre-operative drainage took place, broke open and required several rounds of catheter drainage to close it.

One developed a large vesical calculus nine months after operation, submitted to litholapaxy, made a good recovery, and now is contented and happy.

One individual never fully recovered from operation, had increasing difficulty of micturition with hematuria, accepted the proposition of a suprapubic operation and was found to have extensive cancerous involvement of his bladder neck. The pathologist had reported a benign prostate.

A perineal fistula opened and closed for nearly a year in one patient, who in addition to this, developed epididymitis with abscess of the scrotum requiring drainage. Careful and frequent dilatation of the urethra closed the fistula, but there is a tendency to stricture at the bladder neck and a residual of two ounces.

One patient has subsequently died of cancer involving the entire bladder. He was one who was not, but who ought to have been, cystoscoped before operation. In this case also the prostate was reported as benign.

Although in good general condition another patient had not regained much control several months after operation, but thought he was gaining.

Still another patient developed increasing frequency and dysuria some months after operation. He was found to have a bladder stone and litholapaxy was successfully performed. He led a reasonably comfortable existence for some months more and then died.

Finally one poor fellow has developed melancholia which grows no better with the flight of time. In addition to this he has had several attacks of epididymitis, has at least four ounces of residual urine and what amounts to stricture at the bladder neck.

Having now recited in perhaps fatiguing detail my experiences with perineal prostatectomy, you may ask what I think about the operation. My answer is, that when successful it is a huge success, but one cannot be as certain of the outcome as with the suprapubic operation. The technical difficulties are considerable and it is absolutely essential to know the anatomy of the perineum, a requirement which cannot always be fulfilled. Another essential is that cystoscopy should always be done lest a tumor, stone or diverticulum be overlooked. Here again there are many who can operate but who cannot use the cystoscope. It seems to me that these are two strong arguments against the general employment of this type of operation. The mortality has certainly been small, but the number of unsatisfactory post-operative results has been too great to satisfy me. The untoward post-operative results are largely due to lack of control, tendency to stricture of the bladder neck and inability to empty the bladder completely. Injury to the rectum has not been a factor, nor has a persistent perineal fistula been an item of any consequence. On the whole I think there is no question but what in the majority of cases the two-stage suprapubic operation is the best and safest procedure.

A CASE OF OVARIAN PREGNANCY.

By Michael F. Fallon, M.D., Worcester, Mass.

The occurrence of ovarian pregnancy is so rare that I should not have the temerity to report the following case were it not for the authoritative pathological diagnosis by Dr. Howard T. Karsner, formerly of the pathological department of the Harvard Medical School, now professor of pathology at Lakeside Hospital, Western Reserve University School of Medicine Cleveland, Ohio.

Ovarian pregnancy was recognized in 1614 by Mercerus; but even as late as the nineteenth century, authorities differed as to the possibility of its occurrence,—the English school denying its possibility, while the Germans almost universally admitted its possibility. Confusion may easily occur in the diagnosis, and the judgment of true ovarian pregnancy should rest with the trained pathologist.

The difficulty in the diagnosis, however, is not so great where the pregnancy is prior to the sixth or eighth week, such as is our case; since, in such cases, the relation of the fetal tissues within the ovarian substance can be definitely outlined, and, indeed, the majority of authenticated cases have been those where the pregnancy has been of less than six weeks' development.

The criteria by which ovarian pregnancy is established were formulated by Spiegelberg in 1878, and these criteria are now generally accepted. They are: (1) that the tube on the affected side be intact; (2) that the fetal sac occupy the position of the ovary; (3) that it be connected with the uterus by the ovarian ligament; (4) that definite ovarian tissue be found in its wall.

Norris, in a study of the literature of ovarian pregnancy for a period of ten years, found 19 positive cases.

Williams, of Johns Hopkins University, in a searching examination of reported cases up to 1906, found thirteen cases positive, seventeen cases highly probable, and five cases probable; and he noted that of these thirty-five cases, in eleven, the pregnancy went on to full term, and in not a few instances gave rise to lithopedian formations. And he and other authorities concluded that the ovary can accommodate itself more readily than the tube to the growing pregnancy.

Rupture. at an early period, is the rule. The symptoms of ovarian pregnancy are essentially the same as those of tubal pregnancy, *i.e.*, the missed period and then irregular uterine flowing, at times accompanied with cramp-like pains; the pains, however, are not severe unless rupture takes place.

When rupture does take place, the symptoms are likewise similar to those of ruptured tubal pregnancy, *i.e.*, sudden sharp pain with collapse.

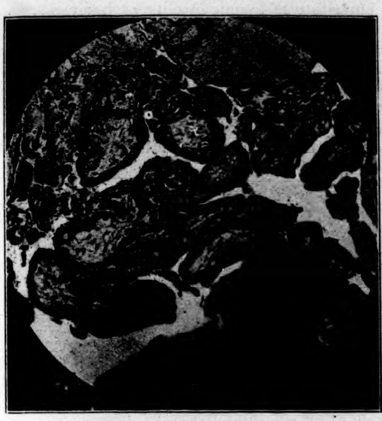
Th ovary from anatomical reasons, permits of a greater expansion than the tube, and thus gives opportunity for a longer development of the fetus; and when the rupture takes place, the bleeding from the ovary is apt to be greater than that from a ruptured tube, since the avary has a richer blood supply.

From a study of animals and human beings, it is now universally accepted that the union of the spermatozoon and the ovum takes place normally either at the fimbriated extremity of the tube or upon the surface of the ovary; hence, in its incipiency, pregnancy normally is extrauterine.

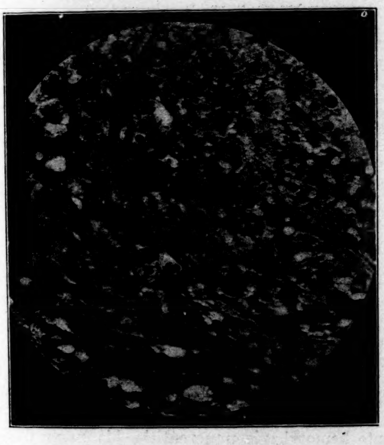
Ovarian pregnancy results from the uniting of the spermatozoon and the ovum in the graafian follicle, and the further development within ovarian substance.

HISTORY OF CASE.

Mrs. P., aged 30, multipara, last confinement six months before operation. Since confinement, menstruated irregularly, but for a few weeks previous to operation had frequent slight flowing spells and indefinite abdominal pains.



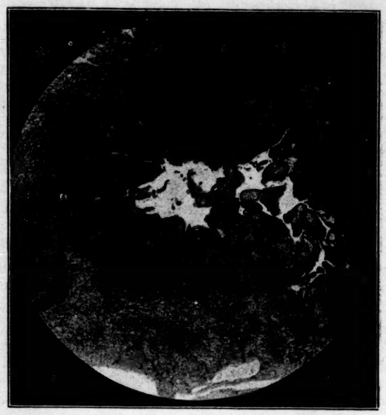
High Power Magnification of the Chorionic Villi Lying in a Mass of Blood Clot.



High Magnification of the Large Mononuclear Cells of the Corpus Luteum, Showing at One Side the Ingrowing Connective Tissue Cells.

Operation, May 18, 1914, by Drs. Fallon and William F. Lynch.

On opening the abdomen a quantity of blood was seen in the pelvis and a tubal pregnancy looked for, but both tubes and both fimbriated extremities were normal. On the surface of the right ovary was a small bleeding cyst filled with blood clot. There was a constant dripping of blood from this cyst. This cyst, with the surrounding ovarian tissue, was excised and sent to Dr. Karsner of the pathological department of the Harvard Medical School. (The abdominal pains, by reason of which the patient was sent to the hospital, could have been due to either a pathological appendix or to gall-stones, or to both, but at the time of operation, a lower abdominal median incision was made in the belief that the lesion was extra-uterine pregnancy. (The patient at this time refused operation for gall-stones, but four years later we operated for gall-stones, and took occasion to examine the resected ovary. Here was a small nob on the surface showing the site of the previous resection.)



Low Power Magnification of a Field Showing at One Side the Chorionic Villi and at the Opposite Side the Tissue of the Corpus Luteum. Most of the Tissue is Lutean, the Blood Clot only Appearing Between the Villi and the Margin of the Photograph.

Dr. Karsner kindly sent us photographs showing chorionic material surrounded on all sides by lutean tissue. Here follows Dr. Karsner's description of the specimen:

Histologically, specimen is found to be a corpus luteum with only a small rim of ovarian tissue on one side. It measures 20 x 5 mm. The outer margin of the corpus luteum shows a slight ingrowth of connective tissue. Centrally, there are large masses of blood clot, showing fibrin, erythrocytes and leukocytes. Embedded in the clot and in several places practically in apposition to lutean cells are numerous sections of chorionic villi, showing the usual central arrangement of connective tissue cells with intervening paramucin surrounded by a single or multiple layer of small cuboidal cells. In connection with the cuboidal cells are frequent large multinucleated suncitial masses.

A comprehensive study of the specimen shows this chorionic material to be surrounded on all sides by the lutean tissue. The diagnosis is therefore pregnancy *in corpus luteum*.

(Signed) Howard T. Karsner.

DISCUSSION OF DR. COTTON'S PAPER.

Dr. Seldom B. Overlock, Pomfret, Conn.: I was glad to hear Dr. Cotton speak of the work of the smaller hospitals, and in the smaller hospitals the whole secret of the thing, as far as I know, is that the surgeon has taken care of the case himself as he takes care of the private patient. The great difficulty in our State, when the act came in eight or ten years ago, was the fact that the patient wanted his own physician to take care of him. Later, in many instances, these patients who had been taken care of at home presented themselves at a hospital with septic wounds or some mal-function due, for example, to an unrecognized severed tendon or badly adjusted fracture. This is in great measure being overcome by the experience of the injured person himself. He has learned that he receives better care and secures better results by entering a hospital immediately after he has received his injury. He makes this fact known to his fellow employees and this results in more and more of them entering hospital as soon as injured.

Dr. Ernest A. Wells, Hartford: I would like to ask Dr. Cotton what impelling force he expects to find to separate the patient from his physician and get him into such an institution as he describes. We know that the institution will frequently take better care of the man than his private doctor. But in many instances the very fact of defective treatment and a slow or poor result has become a source of increased revenue to the doctor.

Dr. F. J. Cotton, Boston (closing): In regard to Dr. Wells' question, I think that in the long run, the force is the intelligence of the man who is being treated. The fact that the patient is free to go ahead with his own doctor is not a great handicap since the war. The patient is perfectly ready to change his treatment at the suggestion of an insurance company who want to send him somewhere, if he is convinced that the treatment he is going to get is real and that it gives him some prospect of better results, and that he is being fairly treated. The patient in a great many instances feels that the insurance company isn't treating him fairly. So we are coming forward with this proposition not to make it a partisan problem. The injured man thinks that the insurance company does not care about him, and if he can be assured that he is going to be taken care of, that the insurance company is trying to do something for him, then I think there will be no trouble. The one catch that remains is in digging out these cases, and that is the proposition I had in mind for a routine review. If these cases are reviewed and the matter is reported to an accident board, then it is reasonable that the cases are going to be straightened out. The trouble is that these cases go along for months and months, and the only way now in our State is for an intelligent insurance man to keep track of these cases and turn them over to private men for private work, and they will get the case over if they know that it isn't being properly handled. In the meantime I think it is up to the insurers, the "carriers" to adjust that. I think that the difficulty is more apparent than real if you have something to offer.

DISCUSSION OF DR. SMITH'S PAPER.

Dr. D. F. Jones, Boston: We have all been in the habit of considering all lesions of the pancreas under one variety, that is, acute hemorrhagic pancreatitis, an acute abdominal condition in which we find bloody fluid, fat necrosis and varying amounts of blood about the pancreas. The patient is operated upon and the outcome is fatal in a large percentage, 50% to 75% of the cases. That there are all grades of acute pancreatitis, from small areas of congestion or oedema, to apoplexy or gangrene of the pancreas, and of chronic pancreatitis from simple thickening of a large or small part, to abscess formation, is rarely thought of.

The prognosis in the acute cases would seem to be almost determined by the amount of blood about the pancreas. Many of the milder cases recover with operation, and I am convinced that many cases are not operated upon at all.

The chronic cases, including the abscesses, recover in a large proportion of cases. The acute cases should be operated upon and the area about the pancreas drained early, because this is the only possible hope for many of them.

Dr. Sweet reported several cases of abscess of the pancreas, and there are more of them, I believe, than is generally supposed. The prognosis in these cases is excellent. It will be seen, therefore, that the prognosis in pancreatitis should not be considered under one head.

In regard to the amount of the gland that is necessary to life, I have one interesting case which was operated upon at the Massachusetts General Hospital some five years ago. He had acute hemorrhagic pancreatitis, his lesser peritoneal cavity was opened, the gland itself was opened by separating the lobules of the gland with the finger. The man made a fairly good recovery with sloughing off of what appeared to be the whole body of the pancreas. Of course, it was not, but it was a large piece of the pancreas. He has had, since that time, what appears to be a pancreatic fistula which has been discharging about four ounces a day ever since, and in spite of this he is in perfect health and his digestion good. He has no symptoms of diabetes at the present time. It is evident from this case that the margin of safety must be very large.

These cases are very interesting and diagnosis is difficult. I know that up to within a few years I had never seen a case where a correct diagnosis had been made. The usual diagnosis has been intestinal obstruction in the great majority of cases I have seen. With surgeons who take the trouble to go at it very carefully and thoroughly nowadays, I think the diagnosis can be made much more frequently. I also believe that many cases diagnosticated as attacks of gall stones are really attacks of pancreatitis.

DR. R. B. GREENOUGH, Boston: I can bear out what Dr. Jones has said in regard to cases of pancreatitis of the milder type, which may cause alarming symptoms but some of which, at least, recover without operation. I believe, myself, that mild degrees of acute pancreatitis are not uncommon. I have in mind a patient on whom I operated some years ago for symptoms of acute intestinal obstruction and distention of the upper half of the abdomen. There was, I found, no mechanical obstruction, but there was some bloody fluid in the peritoneum, and a few spots of fat necrosis which directed attention to the pancreas. The pancreas was slightly enlarged, but I found no area which I thought it legitimate to open into and drain. I closed the abdomen, and the patient made a satisfactory recovery. This case would undoubtedly have recovered without operation. As a matter of fact, however, the diagnosis being so uncertain, I believe symptoms such as the above demand an exploratory operation, and under similar circumstances, I would operate again.

DR. LYMAN ALLEN, Burlington, Vt.: I think Dr. Greenough was pretty lucky with that case. I want to report one I saw a year ago in which the symptoms were those of a ruptured gastric or duodenal ulcer. The case, a woman of 45, was operated upon twelve hours after the onset of symptoms. There was no history of previous digestive trouble. There were no gall-stones, no inflammation of the gall-bladder, and no gastric ulcer; the head of the pancreas was of a dark chocolate color; there was no abscess; small spots of fat necrosis were all over the belly and omentum, and there was free, cloudy fluid in the abdomen. In that case I drained from the region of the head of the pancreas, and then in spite of the fact that the gall-bladder appeared healthy, I drained the gall-bladder, thinking that in that way I should be draining the pancreatic duct. That case made a recovery, operated upon after a delay of twelve hours. Those acute cases ought to be operated upon early, for the symptoms are those of an acute abdominal lesion, which demands immediate surgical intervention. This case was also interesting because within three months she developed a stricture of the esophagus which I thought at first was entirely reflex, but which apparently is not. She has refused any operation, but for a time allowed the occasional passage of a bougie, which she refuses now. I have not seen her for six months. She is well and is doing her own work. As long as she restricts her diet to semi-solids and liquids, she gets along well.

DR. ALFRED M. ROWLEY, Hartford: Dr. Sweet spoke about one diagnostic point—pallor of the patient. These patients are in a state of shock and have an upper abdominal lesion, and I think we can go one step further and say that there is not only pallor but there may be cyanosis and dyspnoea. This is seldom present in other upper abdominal lesions.

Dr. Robert B. Greenough, Boston, presented a paper on "Radium and X-ray in Treatment of Cancer."

DR. ARTHUR T. JONES, Providence: I have not prepared a paper. Being on the program with Drs. Greenough and Simmons, I know that you will get the real information from a scientific standpoint which you want, from them. Still I felt that possibly a few remarks from me from the viewpoint of the average man who is seeing these cases each day or each week, might be of some value. I think we all see a certain number of cases that are inoperable, we feel, from a surgical standpoint; and those are the cases which we are inclined to turn over to radiation, either x-ray or radium treatment. Personally, I have felt that a case which was surgically operable I did not feel like turning over to radium treatment. Now these men who are capable of forming their opinions, I wish would set us right on that point. Are there certain lesions which it would be better to treat primarily by radiation rather than to attempt surgery primarily, or shall we treat these cases surgically and follow that treatment up with our radiation? I have not felt quite sure on those points. In the cases I have had,—most of them, as I say, inoperable—the results have not been very satisfactory. I have tabulated just a few cases, of which I want to give you the data briefly, which I think are typical of the work we get. Those cases are treated either here in town by our competent radiographer, Dr. Gerber, or we send them to Boston, to the Huntington Memorial. Some cases have been very satisfactory, but the majority of them have been unsatisfactory. Dr. Greenough and Dr. Simmons will probably tell us why—whether those cases have gone too long or whether that is the present status of the treatment and whether we cannot hope for anything more than we are getting at present.

I want to note these cases: The first case that came to me had a hysterectomy eleven years ago by Dr. Cushing in Boston. She had a malignant condition in the vaginal vault following the operation, and radium was applied the 15th of June of this year, and that patient is improving.

The second case, malignant tumor of the cheek and lower jaw, was operated upon and had a recurrence; radium was applied in May of this year. The patient died in September. No apparent improvement from radium treatment.

The third case, a woman, 41 years old, with recurring cancer of the breast: radium treatment in March. The patient died in August.

Next case, woman, 60 years old, with recurring cancer of the breast following operation. Radium applied in March; her condition as present is improving.

The next case is rather interesting and one of the few cases I have had which have given a satisfactory result. This woman was 41 years old, a widow, sent to me with enormous great cancer of the cervix—one of those great big ones you can sweep your hand around, suspended in the vagina, and with a pelvis full of cancerous disease. I refused operation on her and said her only hope was radium treatment. Dr. Gerber treated her with radium, and her condition cleared up marvelously. It was one of those cases that worked like magic. Her vaginal vault is free from any cancerous disease, the uterus feels really larger than normal; it is fairly movable, and the condition is so good that I wondered whether we could do a hysterectomy on her now. On receiving advice not to, we have left that woman as she is, and recently without our knowledge or consent she has married again. But her case has been satisfactory from the standpoint of clearing-up symptoms. I feel that she is going to have a recurrence and eventually die of cancer; but the point is, should we in a case of that sort operate after our radiation, and will Dr. Greenough and Dr. Simmons tell us when we shall operate? Some of the men may operate shortly, within two or three days after the application of your radium; if you do not, then the operation will be exceedingly hard, and is it going to be as successful as early operation?

Another case: recurring cancer following panhysterectomy. Radium was applied in October, 1919, one year ago; her present condition is unsatisfactory and she has a very large mass in the pelvis pressing on the rectum and on the bladder, and her condition is getting at present, rather miserable and life is almost unbearable for her. She is still living and was in my office the other day.

The next case, 50 years of age, inoperable cancer in which we used the *Percy* cautery, recurrence following, radium was used in February of this year. Apparently no result. She died in June.

Next case, a woman, 71 years old, with a growth on the forehead, epithelioma, rather extensive, that was removed and recurred. She had radiation, and it looked as though we were going to get no result—that it was going to continue to recur. The recent report from her is that it is improving; it is clearing up and it looks rather satisfactory. Evidently the fright we got was from the effect of the radiation rather than from the effect of the growth.

The following case (that was a recurring cancer of the breast in a woman of 45 years, by the way), in a small area which resisted healing and was very persistent. Radium was applied in June and her condition has entirely healed.

The last case, aged 63 years, cancer of the uterus, which was treated by Dr. Pfahler of Philadelphia, came under my observation this summer. Her history shows that it was one of those extensive inoperable cases. Dr. Pfahler gave her radium and she came to me with a rather satisfactory condition. The vaginal vault was clean but showing an area which seemed to show that the effect of the radiation had not subsided. There was a mass in the pelvis, and I advised further radiation, which was done by Dr. Gerber. She has not responded to the second radiation and her condition at present is rather bad.

There are those ten cases which, it seems to me, illustrate fairly well the experience which the average man is having with these cases. And I feel it is up to these men who are doing this thing scientifically to give us the best they can for practical use and all the points they can, and that they should tell us which case, from their experience, will respond and which case will not respond. I think it will be of decided advantage to us if they will give us the practical points which a great many of us need in these cases.

Dr. Arthur L. Chute, Boston: I have been interested in the last few years in the use of radium and its emanations on cancers of the bladder and prostate. The actual work has, for the most part, been done by my associate, Dr. G. G. Smith. I have an impression that the patients derive a considerable benefit from its use, but I think I can only say that it is an impression rather than a definite conviction, because it is so tremendously hard to standardize the malignancy of these tumors and to know what would have happened if one had not used radium. For instance, I met on a train about four months ago a patient upon whom we used radium emanations two and one-half years before; this patient had a most unpromising cancer of the bladder which was removed surgically and upon which radium emanations were used twice; the patient was apparently perfectly well when I saw him. On the other hand, we treated recently another similar case into which we put 25 milligrams of radium and left it for twenty-four hours, and yet recurrence took place almost immediately.

Last winter I had a report from a patient from whose bladder I removed a malignant mass as large as a silver dollar eight years ago. This mass involved the region of one ureter and after excising it I had to reimplant the ureter; the patient was well eight years after operation.

Again I have heard, within a few days, of a patient from whom I removed, eight years ago, a prostate that was both clinically and microscopically carcinoma. This man remains well. Cases like the above make it desperately difficult to measure accurately the value of the use of radium in malignant disease. I have a distinct impression, however, that it is helpful in these cases.

DR. R. B. GREENOUGH, Boston: We have now had radium sufficient to try it out in the treatment of malignant disease for about eight years, and although the material upon which it could be tried was frankly the most unfavorable material—inoperable cases and cases recurrent after operation—we have learned certain things about it, and we have come to appreciate that radium has added wonderfully to our resources in the treatment of malignant disease. There are some questions, however, which still remain unanswered, and among these I would put, first, the question of the advisability of substituting treatment with radium in place of operative treatment in some cases of cancer of certain organs. The first operations done for cancer of the lip were restricted to the V excision. As a result of these operations, only those cases of cancer of the lip were cured which were operated upon so early that metastatic involvement of the regional lymphatics had not yet taken place. For this reason the radical operation was extended by the addition of the neck dissection on one or both sides. With the more extensive operation a greater number of successful cases was obtained, and microscopic examination of the removed lymphatics showed, repeatedly, that early cancerous involvement of the regional lymph nodes was no bar to a radical cure of the disease.

In general, radical operations for the cure of cancer are based upon these facts, and in many other situations the radical or "complete" operation is performed, and patients are cured of cancer even when it has extended beyond its point of origin. For this reason the treatment of cancer of the lip by radium must be regarded as a step backward to the time of the early and incomplete operations for the cure of this disease. In fact, the radium treatment of operable cases of cancer of the lip is not countenanced in the best clinics.

When we come to cancer of the cervix, conditions are not quite the same. The Wertheim operation is intended to accomplish in cancer of the uterus what the "complete" operation does in cancer of the lip or cancer of the breast. There is little evidence, however, that cases of cancer of the cervix which have extended beyond the point of origin are cured by the Wertheim operation. The operation is one of great technical difficulty, attended by a considerable mortality, and with frequent and annoying complications. Under these circumstances we must consider whether the destruction of the local lesion by radium, without mortality and without complications, does not offer advantages over the radical operation. By its use in inoperable cases we find that destruction of the local disease with radium can often be accomplished. The technique now employed is practically a minor operative procedure. The patient is given a brief anesthesia, the cervical canal is dilated and examined, a specimen is taken for microscopic examination, and tubes of emanation are introduced both in the cervical and uterine canal, and into the tissues of the cervix as well.

It is my belief that the time has now come when it is justifiable to treat a series of early and operable cases by radium alone. Until this is done, we shall have no positive facts upon which to go in drawing our conclusions.

DISCUSSION OF DR. BARNEY'S PAPER.

DR. ARTHUR L. CHUTE, Boston: There are two or three things in Dr. Barney's paper about which I would like to speak. In the main I agree with him: in some particulars, however, I differ. I am glad to find somebody else who does a perineal operation at times rather than confine himself to the suprapubic removal of the prostate. Although I do the perineal operation less often than the suprapubic, I believe there are a certain number of cases in which it is the only satisfactory way to attack the prostate and that it should be used more often than it is.

As regards spinal anesthesia, I agree with Dr. Barney entirely. I think its use is one of the greatest advances we have made in urinary surgery. Its use saves damaged kidneys from the injury ether would inflict on them and allows one to do cases one could not do safely if one were limited to ether as an anesthetic. I have used spinal anesthesia in many cases, well over a hundred times, and have had no deaths. I see patients get pallid and occasionally I am greatly concerned about them, but they all get well, and I deplore what I believe to be the great exaggeration of the dangers of spinal anesthesia, especially when these reports are based on a small experience with it. I do not contend that spinal anesthesia is without its danger; but I do believe that it has a very definite field, and I think it is distinctly indicated when there has been renal back pressure; and, too, that it may be used to great advantage in many pelvic conditions as well as in a certain number of conditions in the lower abdomen.

I cannot agree with Dr. Barney in the type of perineal incision that he employs in perineal prostatectomy, if he employs, as I understand it, the regular perineal section incision. This seems to me far less desirable than the cross incision. With this lattter one makes a careful dissection of the perineum and opens the urethra behind the point where his incision may involve the fibers of the cut off muscle—this, I believe, lessens the liability of post-operative incontinence, a condition that is not unknown with the straight incision.

Dr. Barney says that a certain number of instances of malignant prostate are not definitely recognized before operation: with this I quite agree. An advantage of the cross incision and dissection of the perineum is that in cases of this sort one is much more favorably placed to dissect out the malignant prostate than one is with the longitudinal incision, in which the enucleation must be done in the depth of the wound rather than under the eye.

Dr. J. Dellinger Barney, Boston, (closing): I have practically nothing to add except that I think the straight incision unquestionably has an advantage, but I do not agree with Dr. Chute that it gives any less room for the removal of a prostate. The incision is made longer than usual and one can retract the edges of it and see and work perfectly well. I also do not see how the cut-off muscle can be influenced by the incision because whether V-shaped or perpendicular, the incision does not involve anything but the superficial tissues and does not touch the cut-off muscle in any way. It is practically the incision of an external urethrotomy for stricture, and the prostatic urethra and the posterior aspect of the prostate are developed by the finger by blunt dissection. So I do not think there are any cases where trouble is encountered with this incision. I have not looked it up with reference to the cross incision, but I am willing to be shown.

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Original Article.

A NOTE ON GLIOMATA WITH REPORT OF A CASE.

By Henry Viets, M.D., Boston.

[From the Departments of Neurology and Neuropathology, Harvard Medical School; and the Departments of Neurology and Surgery, Massachusetts General Hospital.]

A glioma of the right temporal lobe of the brain with extension into the sub-arachnoid space to the conus terminalis of the spinal cord is reported. The occurrence of symptoms referable to both the brain and the spinal cord and the method of extension of this tumor along a serous surface are of interest from both the clinical and pathological viewpoints. Both of these factors are sufficiently rare to make the case worthy of a record in the literature of brain tumors.

History and Operation. Mr. M., aged 50, entered the Massachusetts General Hospital in October, 1915, with the subjective symptoms of headache, pain in the back and consequent inability to work. His family history was not important. In his past history it was noted that cramps in his legs had bothered him for years, and that a few dizzy spells with momentary loss of consciousness were symptoms of the last three years.

His present illness began insidiously about four months before entrance to the hospital with an increase of the dizzy spells associated with blurring of vision; four weeks later headache began which gradually grew increasingly severe and for two weeks was associated with vomiting. He had also noticed pain in the small of his back up to his neck, around both sides of the abdomen and the thorax and down to his knees, with a sensation of walking on air.

On physical examination the day of entrance the important neurological points found were the following: right pupil larger than the left, both reacted to light and accommodation, knee jerks and ankle jerks both increased but no clonus or Babinski sign. There was moderate weakness of his legs with some ataxia. Some tenderness was noted over the second lumbar vertebra. When examined three days later there was a marked Babinski sign of the right great toe, and the fundi showed mild optic neuritis with an old hemorrhage in the left retina. Five days later the patient became irrational and lost control of his sphincters. Three days after this no knee or ankle jerks were obtained, nor was there a Babinski sign. Two weeks later he developed signs of a right hemiplegia and nystagmus of both eyes. He was slightly irrational and complained of tasting gas and smelling tar. Temperature, pulse and respiration were normal. His blood Wassermann reaction was negative, his white blood count 10,000, blood pressure 125 systolic, 100 diastolic. Lumbar puncture gave a clear, greenish yellow fluid, pressure 170 mm., 15 mononuclear cells, globulin reactions positive and Wassermann negative; a partial compression syndrome.[1] Collodial gold reaction negative. X-ray of spine at various levels was negative. A week later his headache, vomiting and general signs of intracranial pressure had greatly increased. There was a double choked disk of four diopters.

He also developed a left homonymous hemianopsia.*

Autopsy: Gross Pathology of Brain and Spinal Cord. Weight of the brain was 1397 grams. The left parieto-temporal lobe in the region of the trephined opening bulged slightly. On the right side of the base, beginning in the region of the pons and medulla and extending forward along the right cerebral peduncle and the anterior portion of the inferior surface of the right cerebellar hemisphere, and along the right temporo-sphenoidal lobe as far as the optic chiasm, and crossing over a portion of the left cerebral peduncle as far as the left temporo-sphenoidal lobe, there was a slightly elevated grayish, granular layer which continued downward in the pia-arachnoid over the medulla and the spinal cord.

On horizontal cross section of the brain anterior to the optic chiasm, there were no pathological changes. A section just posterior to the optic chiasm (Figure 1) presented an ovoid tumor of the right temporal lobe, roughly 4 x 5 cm. At this point the tumor extended from the mesial aspect of the base of the temporal lobe transversely along the right wall of the third ventricle which was moderately bulged to the left as far as the internal capsule. The tumor did not enter the third ventricle. Its dorsal boundary cut the nucleus lentiformis nearly in half in a horizontal direction, most of the globus pallidus and the more ventral portion of the putamen. These structures were replaced by tumor tissue. Laterally the growth extended to the claustrum, a part of this being involved also. The tumor thus replaced the right optic tract, a large portion of the putamen and invaded and replaced the amydaloid nucleus. The tumor consisted of a pinkish gray, homogeneous tissue which in places showed extensive yellowish, homogeneous areas and some minute brownish-red areas. Part of the tumor in the region formerly occupied by the putamen showed evidence of a shallow cavity.

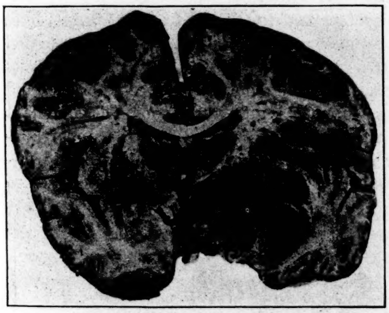

FIG. 1. Cross section 1 cm. posterior to optic chiasm. Note tumor of right temporal lobe replacing part of the nucleus lentiformis, optic tract, and amygdaloid nucleus.

In a brain section 1 cm. posterior to the first section (Figure 2) the tumor was in approximately the same area as Figure 1. In the dorsolateral aspect of the tumor, however, was a cavity 2 x 3 cm., the walls of which were irregular and lined with dirty grayish soft tissue. The cavity contained a small amount of pale, cloudy, reddish fluid. The tumor in this section invaded the whole of the nucleus lentiformis and distorted the external capsule and the island of Reil to a slight degree. The cerebral peduncle and Ammon's horn were entirely replaced by tumor tissue. The inferior horn of the lateral ventricle, which just appeared

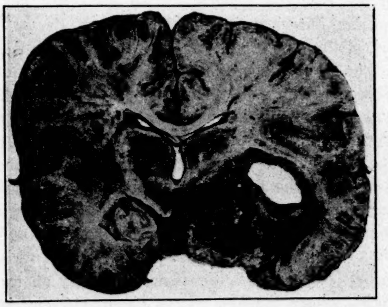

FIG. 2. Cross section 1 cm. posterior to Section 1. Note cavity formation replacing Ammon's horn and obliteration of inferior horn of lateral ventricle.

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* This patient, under observation five weeks, had developed signs during this period of both an intracranial lesion and one of the spinal cord. In the last week of the five there were marked general pressure symptoms, headache, vomiting, choked disk and partial coma. Also important, from the standpoint of localization, was the right hemiplegia, the left homonymous hemianopsia and the hallucinations of smell and taste which were very prominent symptoms. The signs of spinal cord disturbance were very distressing pains of the root type, loss of control of the sphincters, weakness of his legs, with vague sensory symptoms and ataxia, and the coming and going of deep and superficial reflexes. His spinal fluid was also suggestive of some blocking of the subarachnoid space at the distal end of the spinal cord. It was extremely difficult to decide what operation, if any, was advisable. There was the choice of attempting to explore the left parietal region, the right temporal region, or to do a laminectomy. The right hemiplegia was definite enough to indicate exploration of the left hemisphere although we were unable at that time to explain the left homonymous hemianopsia or the cord symptoms. There was no "level" indicated for a laminectomy and the general intracranial pressure signs were so severe that the craniectomy was decided upon. Six weeks after the patient had entered the hospital a large left parieto-temporal bone flap was turned down, but no exploration was attempted at this time. Ten days later a second operation over the same area failed to reveal any pathology in the parietal or temporal lobe.

The patient never recovered from this second exploration and died three months after entering the hospital, subsequent to weeks of coma.

on the left in this section, was completely obliterated by the tumor on the right side.

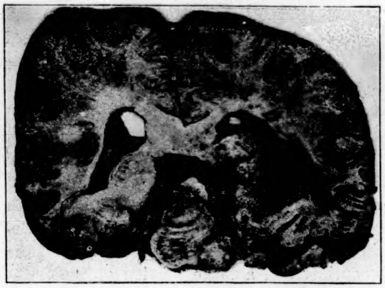

Fig. 3. Cross section 3 cm. posterior to optic chiasm, including pontine part of medulla. Note tumor partly filling inferior horn of ventricle, extension of tumor to ventral surface of pons, compression of pons. No invasion of pons.

The next section (Figure 3) was taken 3 cm. posterior to the optic chiasm and included the pontine part of the medulla. The tumor was seen filling the inferior horn of the lateral ventricle on the right and largely filling the body of the ventricle. There was no evidence of extension anteriorly along the walls of the ventricle, the surfaces of which were not granular or sandy in appearance. The ventricle was not dilated. At this level of the brain the tumor was seen extending out from the temporal lobe towards the mid-line in a ventral position, over the pulvinar, to the right lateral surface of the pons. As the tumor appeared on the ventral surface of the pons it distorted the normal contour of this structure to a marked extent and thus compressed the transverse fibres and pyramidal fasciculi of the pons, especially on the right, where the tumor was about 1½ cm. in thickness. The new tissue passed below the pons to the opposite side and ascended dorsally the lateral border of this side as far as the junction of the pons and cerebellum. After the tumor left the temporal lobe it was entirely confined to the pia-arachnoid space. Thus, in stripping off the pia from the ventral surface of the pons, the tumor was removed with it, leaving the surface smooth and clean without the slightest evidence of invasion of its structure. This was true of all the tumor tissue found on the base of the brain outside of the temporal lobe, except the part of the tumor at the junction of the temporal lobe, cerebellum and pons where there had been slight invasion of the cerebellum.

The tumor thus extended in the temporal lobe from a point at about the level of a cross section through the middle of the pons (tip of inferior horn of lateral ventricle) to an anterior boundary at about the level of a cross section through the optic chiasm. It was continuous with the grayish, slightly elevated granular layer previously described as present on the surface at the base of the brain.

The spinal cord throughout its length showed evidence of tumor tissue in the pia-arachnoid membrane in three or four places in the cervical and upper thoracic region and in two or three in the lumbar region. The new tissue formed small, ovoid swellings along the cord. Sections through the cord at various levels revealed the tumor in the pia-arachnoid membrane of all levels. There was apparently no penetration of the cord itself at any point; the pia could be elevated with the tumor, leaving a smooth, clean surface of the cord below. At the level of the pyramidal decussation the tumor was scanty, situated mostly on the dorsal surface and to the left of the mid-line. Just a centimeter below this point the tumor formed a 0.3 centimeter swelling on the right dorsal surface. Throughout the lower thoracic and upper lumbar region the tumor was abundant on all surfaces of the cord. In the upper lumbar region especially, the tumor completely surrounded the cord increasing its diameter to nearly double (Figure 4). In the lower lumbar region the tumor was somewhat smaller and occupied again largely the dorsal surface of the cord. Extension in the sub-arachnoid space was noted to the tip of the conus terminalis. There did not appear to be any growth outward along

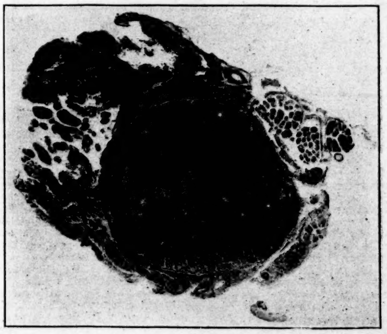

Fig. 4. Upper lumbar cord. Note tumor completely surrounding cord; no invasion.

the nerve roots. There was no evidence at any point along the spinal cord of penetration by tumor of either the arachnoid membrane or the pia.*

Microscopic Pathology. A section of the temporal cortex extending into the area of the tumor and through the cavity of the tumor was studied microscopically. The section was about the level of Figure 2. The following points were noted. There was a slight pial gliosis of the cortex, especially well marked at the base of sulci. The cell layers were well marked and the cells appeared normal. The blood vessels showed no changes. Beneath the cortex the white matter appeared normal but there was a well marked layer of sub-ependymal gliosis along the free edge of the ventricle. In many places the ependyma was increased to four or five layers especially near the junction of the lining and the tumor growth. As one approached this junction the ependymal cells stained less deeply. One could not be sure that the tumor grew from this ependymal layer but the sections are very suggestive of this. Certainly the change from the ependymal cells to tumor cells was not an abrupt one and the tumor cells near the junction had all the appearance of ependymal cells except that they were more irregular in size and shape. Dorsal to the tumor mass the division between the tumor and the white matter was not well marked. There was a more or less gradual transition from the normal neuroglia of the white matter to the glia cells of the tumor. Between the two there was an extensive area of gliosis of a slightly different character from the glia proliferation seen in the tumor. The cells took a deeper stain, as did the fibrils. This gliosis was especially well marked around the blood vessels which proliferated somewhat in advance of the tumor growth. It would seem as if there was a cellular glia reaction just ahead of the tumor which the tumor as it grew would infiltrate and replace.

The different parts of the tumor tissue itself showed marked variations. Four fairly well marked areas could be distinguished: (1) an area of loose glia reticulum; (2) an area of necrosis; (3) an area of closely packed glia cells, and (4) an area of small, prominent blood vessels.

The area of loosely packed cells showed a large amount of intracellular substance. The cells had a tendency to form in lines of whorls giving the whole picture a wavy appearance. Many nuclei were oval or round with well marked nucleoli and nuclear granules; the cytoplasm of these cells was faintly stained. Other nuclei were almost rod-shaped with heavily staining granules; in these the cytoplasm was more marked. Still other nuclei were irregular in shape and stained more lightly. Mitotic figures were occasionally seen but no multinuclear cells. Neuroglia fibrils were moderately abundant, running in all directions without obvious connections with the cells. Capillaries in this area showed a single layer of normal endothelial cells.

The second type of field, the areas of necrosis with only a few cells and a mass of detritus, was found scattered throughout the tumor. Near these areas small arteries were seen completely filled with blood clot. Thrombosis of the blood vessels was very common. These fibrin clots stained deep blue with Mallory's nuclear stain. Many of the smaller vessels were completely obliterated, others partly so. No tumor cells were seen in the blood vessels.

The third area of closely packed cells showed very little intracellular substance. Almost no fibrils were seen in these areas and the few that were made out were packed closely together between cells in marked contrast to the loose arrangement of the first area. The cells had large oval nuclei which stained deeply. A few capillaries were present. Small cystic spaces about the size of capillaries were common. The cells showed marked annular arrangement. This type of tissue was found nearest to normal white matter but did not appear to grow into it.

The fourth area of prominent blood vessels was nearly one-half filled with fine blood channels lined with a single layer of endothelial cells. These seemed to run in all directions and could be seen between the cells in almost every part of the field. They were so numerous that the section suggested an angioma. Where such an area was slightly necrotic all these vessels were filled with masses of fibrin.

Another section through the tumor at the level of its leaving the temporal lobe and presenting itself on the ventral surface of the pons was observed. The tumor here presented the picture described above as the third area of closely packed glia cells with few fibrils and no areas of necrosis. The blood vessels were few in number and showed no thrombosis. The cells at this point showed a marked tendency to annulate. The nuclei were small, deeply staining, and mostly round. The tumor was completely confined to the subarachnoid space and there was no evidence of penetration into the pons. The pons showed no reaction in any way to the tumor although it was markedly compressed by it in many places. Where this compression had taken place, the pontine fibers seemed only more closely packed together and the tumor was seen passing along the edge of the pons and up along its lateral border to enter the cerebellum.

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* Part of the description of the gross specimen is from the autopsy record of the Massachusetts General Hospital, for which I am indebted to Dr. J. Homer Wright.

Another section at the base of the cerebellum, at the junction of the pons, cerebellum and temporal lobe was studied. The tumor tissue appeared in the meshes of the pia over the cerebellar convolutions and at one or two places invasion seemed to have taken place. At these points the cerebellum was replaced by the tumor. Adjacent to these replaced areas the cerebellum showed a reaction to the foreign body. The granular layer was largely replaced by glia tissue. Purkinje cells had largely disappeared and the tumor cells were found here and there in the granular layer. In places the tumor had definitely taken on the architectural form of the cerebellum. The cells had a marked tendency to form themselves into lines, in places resembling the three or four cell layer of ependymal cells seen on the wall of the lateral ventricle. The tumor cells had oval nuclei, sharply defined granules with well marked nucleoli and little or no visible cystoplasm. There were many wavy fibrils. These cells had the same appearance as the tumor cells found in the temporal lobe.

A section through the cervical spinal cord showed the tumor largely on the dorsal surface although it could be traced in the sub-arachnoid space entirely around the surface of the cord. The cord itself was not invaded at any point and appeared normal. The nerve roots appeared normal, although completely surrounded by tumor, especially the dorsal roots. The tumor exhibited the same characteristics microscopically as seen in the temporal lobe.

In microscopic sections of the thoracic and lumbar cord the tumor was shown confined to the pia-arachnoid. There was no invasion of the spinal cord at any point. The tumor gave the same microscopic appearance as noted above.

DISCUSSION.

The autopsy was helpful in throwing light on our bizarre symptomatology. The general pressure symptoms of loss of consciousness, dizzy spells, headache, vomiting, blurring of vision, optic neuritis and later choked disc were all explained by the tumor mass in the cranial cavity. The hallucinations of tasting gas and smelling tar can be attributed to involvement of the right uncinate gyrus by the tumor. The left homonymous hemianopsia was the result of cutting the optic radiation in the temporal lobe or pressure on the right optic tract before the chiasmal crossing. The right hemiplegia was more difficult of explanation even after the pathology was known. Unfortunately this sign led us astray and caused a futile exploration of the left parieto-temporal region. The hemianopsia and the uncinate attacks should have turned us towards the right temporal lobe, the correct site of the lesion.

The spinal cord symptoms of diffuse root pain and sensory changes and ataxia in the legs combined with alterations of the reflexes of the leg from exaggeration with a Babinski sign to loss of reflexes were all explained by the growth of the tumor in the sub-arachnoid space and its variations of pressure at different levels of the cord.

Pathologically this case of brain tumor showed the characteristics of a malignant glioma with a marked tendency to extend along surfaces. A remarkable tumor with this same tendency has been described by Mallory,[2] who, in 1908, reported a glioma originating in the lumbar region of the spinal cord which infiltrated and destroyed the lower part of the cord and then spread to the pia and along it into the arachnoid space forming a thick layer surrounding the cord throughout its entire length. It also extended over the cerebellum and cerebrum. Councilman[3] has reported two cases which he describes as follows: "A glioma originating in the pons grew over this in a mass which resembled a mass of plaster poured over the surface of this and along the entire length of the cord." In this latter case, as well as in the case reported by Mallory, the cord was infiltrated.

SUMMARY.

A brain tumor, glioma, of the right temporal lobe is reported which infiltrated and largely replaced the tissues of the lobe without deforming the general shape of the brain. A large cyst was formed. The tumor extended to the base of the brain and bulb where it ran in the sub-arachnoid space over a large part of the ventral surface of the brain and extended down the spinal cord to the conus terminalis without invasion of any part of the central nervous system except a small portion of the left cerebellum. The medulla and cord were greatly compressed by the tumor mass. The symptoms and signs of both a brain and spinal cord tumor are recorded with the report of a negative surgical exploration. Both macroscopically and microscopically the tumor showed the characteristics of a malignant glioma. The case illustrates in a striking manner the tendency of a glioma to extend along a serous surface without invasion.

REFERENCES

[1] Aver and Viets: Jour. A. M. A., 1916, lxvii, 1707.
[2] Mallory: Jour. Exp. Med., 1908, x, 575.
[3] Councilman: Colorado Med. 1915, xii, 289.

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Book Reviews.

Hygiene: Dental and General. By CLAIR ELSMERE TURNER. St. Louis: C. V. Mosby Company. 1920.

A fundamental knowledge of general hygienic principles and definite information about the interrelationship between abnormal conditions of the mouth and other organic and systemic defects is requisite to the successful pursuit of the dental profession; yet there is perhaps no book other than *Hygiene: Dental and General* written for the dental student and practitioner which presents the subject of general hygiene with special reference to the needs of the dental profession. In considering the hygiene both of the mouth and of the body as a whole, the text has been arranged with reference to two distinct sets of problems: (1) the proper development and normal functioning of the parts, and (2) the problems arising because of the presence of infectious organisms. The first five chapters of the book deal with the former aspects of dental and personal hygiene: the hygiene of the mouth, the hygiene of nutrition, action, reproduction, and the hygiene of the central nervous system. In the remainder of the book the author has discussed the development of disease prevention and its effect upon dental practice, personal hygiene, and the public health, presenting chapters on immunity, communicable diseases, public health administration, food control, water supply, waste disposal, and school and industrial hygiene. There have been included also chapters by William Rice on Dental Hygiene and Oral Prophylaxis. The bearing of all these subjects upon the problems encountered in the ordinary practice of dentistry is an intimate one. Dr. Turner has given a comprehensive survey of the whole field of dental and general hygiene, considering not only the teeth, but other organs of the body as well, and even environmental factors outside the body. The book is well illustrated and represents logical and original thought on the subject of dental and general hygiene.

Vaccination in the Tropics. By W. G. KING, C.I.E. London: Tropical Diseases Bureau. 1920.

Although the toll of human life made by smallpox in most of the tropical possessions of Great Britain is heavy, there is available practically no literature in the English language, with the exception of this volume, "Vaccination in the Tropics," which gives authoritative information on the institution and maintenance of vaccine establishments in the tropics. The present volume has been prepared by Colonel King at the request of Viscount Milner, Secretary of State for the Colonies, for distribution to the governments of the tropical African dependencies. It is an excellent treatise on the subject, and will be of inestimable value to the isolated worker confronted by the problems it describes. The book is divided into two main sections,—the first dealing with various factors of smallpox incidence and methods of protecting populations; the second, with animal vaccine. Various types of smallpox, their respective mortalities, and epidemic cost are considered, together with the respective values of inoculation, vaccination, and natural smallpox. Valuable information is given in regard to the equipment needed by vaccinators in tropical countries and in regard also to various modes of operating, the development of vaccine in the human subject, the after-treatment of vaccination, and the sequelae of vaccination. Detailed consideration is given to the cultivation, rejuvenation, and preservation of animal vaccine. In an appendix is described Noguchi's method of purification of vaccine. Plates and diagrams illustrate the text. This book is a valuable contribution to an important and inadequately reported subject.

THE BOSTON
Medical and Surgical Journal
Established in 1812

An independently owned Journal of Medicine and Surgery, published weekly under the direction of the Editors and an Advisory Committee, by the Boston Medical and Surgical Journal Society, Inc.

THURSDAY, FEBRUARY 10, 1921

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PROFESSIONAL INCOME: HOW THE FEDERAL TAX APPLIES TO THE MAN OF THE PROFESSIONS.

To the professional man the problem of correctly making out an income tax return for the year 1920 is somewhat more involved than that presented to the salaried man. The wage-earner on a fixed salary has an accurate estimate of the amount of compensation received for personal services, while the professional man's income varies from year to year. In the professional class may be included the physician, dentist, lawyer, architect, veterinarian, author and clergyman. Each must figure up his net income for the last year. If single, or if married and not living with his wife, and his net income was $1,000 or more, or if married and living with his wife and his net income was $2,000 or more, a return must be filed.

The exemptions are the same as for the year 1919: $1,000 for single persons and $2,000 for married persons living with husband or wife, and heads of families, plus $200 for each person dependent upon the taxpayer if such persons are under 18 years of age, or incapable of self-support because mentally or physically defective. The period for filing returns is from January 1, to March 15, 1921.

The professional man must make a return of all fees, salaries and other compensation for services rendered, together with income from all other sources. If he keeps his accounts on the "receipts and disbursement" basis—which means a record of the amount received and the amount paid for expenses—he should file his income tax return for the year 1920 on that basis. If he keeps books showing income accrued and expenses incurred during the year, he must make his return from his books and include all income, even though not entered on his books. If books are kept on the accrual basis the taxpayer must include all income that accrued, even though not actually received, and may deduct items of expense, although not actually paid. Both the receipts and disbursement basis and the accrual basis are explained in instructions on the forms for filing individual returns of income.

This constitutes gross income from which the taxpayer is allowed certain deductions in arriving at net income upon which the tax is assessed. Among such deductions are the cost of supplies used by him in the practice of his profession, expenses paid in the operation and repair of an automobile used exclusively in making professional calls, dues to professional societies and subscriptions to professional journals, rent paid for office room, expense of fuel, light, water, telephone used in his office, and the hire of the office assistants. Amounts expended for books, furniture and professional instruments and equipment of a permanent character are not allowable deductions. In the case of a professional man who maintains an office, but incidentally receives at his home patients, clients, or other callers in connection with his professional work, no part of the rent of the home is deductible. If, however, he uses part of the house for his office, such portion of the rent as is properly attributable to such office is a deductible item.

A reasonable allowance is made for depreciation, or wear and tear of equipment and instruments used by professional men. When, through some new invention or radical change in methods or similar circumstances, the usefulness in his profession of some or all of his instruments or other equipment is suddenly terminated, so that he discards such asset permanently from use, he may claim as a loss for that year the difference between the cost (reduced by reasonable adjustment for wear and tear it has undergone) and its junk or salvage value. If the apparatus was owned prior to March 1, 1913—the date the first income tax law became effective—its fair market value at that date should be considered instead of its cost in figuring depreciation and obsolescence.

Deductions for uncollectable fees form an important item in the returns of many professional men. To be allowed as a deduction, a debt must be worthless and must have been charged off within the year in which its worthlessness was discovered. The return must show evidence of the manner in which discovery was made. For example, statement should be made that the debtor has been discharged from bankruptcy or has disappeared, leaving no trace, or that all ordinary means of collections have been exhausted.

A debt proved to be worthless is not always a proper deduction. Unpaid amounts representing fees for professional services are not allowed as deductions unless included as income in the return for the year in which the deduction is sought or in a previous year. The fact that expected income was not received does not reduce the taxable income. If a debt is forgiven it cannot be deducted, because it is then regarded as a gift. A debt may not be charged off or deducted in part, but must be wholly worthless before any part can be deducted.

Compensation in any form for professional services must be included as income. If a physician, lawyer, or other professional man should receive from a merchant goods in payment for professional services, the fair market value of such goods must be included as net income.

Forms for filing returns are now available at offices of collectors of internal revenue and branch offices. Collectors will mail to each person who last year filed a return a copy of the return form for 1920. Failure to receive a form, however, does not relieve a taxpayer of his obligation to file a return and pay the tax on time. Taxpayers whose net income for the year 1920 was $5,000 or less should use Form 1040A. Those whose net income was in excess of $5,000 should use Form 1040.

In addition to the individual forms, partnerships must file a return of income, or even if there was no net income, on Form 1065. Partnerships as such are not subject to the income tax. Individuals carrying on business in partnership, however, are taxable upon their distributive shares of the net income of such partnerships, whether distributed or not, and are required to include such shares in their individual returns. The return must show the name and address of each partner and his share of net income.

The tax this year, as last, may be paid in full at the time of filing the return—on or before March 15, 1921—or in four equal installments, due on or before March 15, June 15, September 15, and December 15. Payment may be made by cash, money order or check, which should be made payable to "Collector of Internal Revenue." The return must be filed with the collector for the district in which the taxpayer lives or has his principal place of business. Heavy penalties are provided by the revenue act for failure to file a return and pay the tax within the time prescribed by law.

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MEDICAL NOTES.

The Bowdoin Medical School.—The Bowdoin Medical School in Maine will cease to be a department of Bowdoin College at the end of the current year in June, unless it receives financial support. The following announcement, by authority of the boards of trustees and overseers, has been made by President Kenneth C. M. Mills:

By action of the board of trustees and overseers the Bowdoin Medical School will be finally closed as a department of Bowdoin College at the end of the current year, June, 1921, unless by that time some way shall be found to meet the requirements necessary to keep the school in Class A of American medical colleges. It has been conservatively estimated that for this purpose there must be an addition to the resources of the school of $25,000 for immediate equipment of laboratories and of at least $50,000 yearly income for more teachers and for up-keep. Unfortunately at the present time the college sees no way of procuring such funds; the need of such an endowment has often been placed before the people of Maine, but the appeals have never received an adequate response.

The college will not apply for state aid for the school. But if the citizens of Maine and the friends of medical education who believe that the maintenance of a medical school is properly a state function, desire to have the medical school reëstablished as a state institution under state control and adequately supported by the state, Bowdoin College will be glad to give all assistance possible to that end, and would doubtless offer for such a purpose for temporary use, if desired, such part of the buildings and apparatus of the college as might be available.

The trustees and overseers of the college believe that there is a place for a medical school in Maine and are hopeful that the people of the state, despite the great demands on the incoming legislature, will establish such a school as a state institution, around which all the medical and public health work of the state would be centered.

"Certified" Water.—Within the last 12 months the danger to railway travellers of infection with typhoid fever, dysentery, and other water-borne diseases has been reduced to a minimum throughout the greater part of the country by the coöperation of the U. S. Public Health Service with the different state boards of health in the testing of the water used on railway trains for drinking and cooking. Within the next few months, similar protection will be afforded to passengers on river and lake steamers and ocean steamships sailing from American ports. This will tend to end the severe outbreaks of typhoid fever that from time to time have been traced to ships (especially to excursion boats) as well as to the probably more numerous but far less easily traced illnesses of railway travellers from similar pollution.

The following statements in regard to this work have been made by Surgeon-General Cumming of the United States Public Health Service:

"The work was really begun in June of last year, when at the convention of state and territorial health officers, in session at Washington, D. C., a plan was decided upon whereby the Service was to coöperate with the States in reducing typhoid fever, either by sending them sanitary engineers to investigate their water supplies or by helping them to organize State divisions of sanitary engineering to look after the work.

"Work has since been done in nearly half the states of the Union, in many of which sanitary divisions were lacking. In nearly all of these, such bodies have been or are now being organized; and in about half of them surveys have been made of many or all important water supplies, most of which have been found safe for use on trains. Periodic inspection is, however, of course necessary.

"In carrying out this work the Public Health Service has grouped the states east of the Mississippi River into four districts and it will group those west of the Mississippi into five other districts as soon as may be practicable. Each district will be provided with a sanitary engineer from the Service, who will render aid to the state sanitary officers in this group when requested.

"In the Great Lakes Division, the work is a little different, for at present it has to do with the investigation of the sources and the handling of water supplies for vessels on the lakes. It is believed that the information obtained will permit us to frame regulations to govern the water supply of all vessels on American lakes and rivers sailing from American seaports."

War Mortality Rates.—Final figures on army casualties in the World War are contained in the annual report of Surgeon-General Ireland. There were 34,249 men killed and 224,089 wounded.

The proportion of killed to wounded is about the same as in the Civil War, although mortality from gunshot wounds in the World War was only 8.26 per cent. as compared with 13.6 per cent. in the Civil War. The report indicates that improved surgical and sanitary methods in the recent war saved the lives of 5.34 per cent. of all American soldiers wounded.

Of every 1000 men sent to France, 110 were admitted to the hospital as the result of battle casualties, and nearly seven men out of every 1000 died as the result of wounds. Infantry losses were heaviest, 215.6 out of every 1000 men being wounded and 12.77 killed. The signal corps was next with 52.22 wounded and 3.13 killed per 1000.

Deaths from wounds totalled 13,691, or slightly more than 6 per cent., while 158,585 of the wounded, or 70.7 per cent., were returned to duty, the remainder being invalided home for treatment or discharge. Shell wounds were by far the most fatal.

LAST FOREIGN QUARANTINE STATION FOR THE PUBLIC HEALTH SERVICE.—With the transfer, now imminent, of the New York Quarantine Station to the U. S. Public Health Service, the Federal Government will come into complete possession and administrative control of the country's inner line of defense against disease coming from abroad.

Legislation first adopted in 1893 and subsequently supplemented, provided for the purchase by the Federal Government of the seaport quarantine stations of such states as might be willing to part with them. Most states were glad to be relieved of the expense of carrying on a work that was essentially one for national rather than local protection; but some of them hesitated to give up local control, especially in the early days when ideas of proper quarantine methods differed radically, owing to the lack of information now available as to the transmission of the great plague diseases.

However, one by one the stations were taken over until only New York was left; and now the agreement for its transfer has been reached and formal action waits only on the presentation by the State of proof of title to the premises.

PUBLIC HEALTH SERVICE TO TRANSFER TUBERCULOSIS PATIENTS TO THE EAST.—All the hospitals and contract hospitals of the U. S. Public Health Service in the semi-arid southwest are already crowded with tuberculosis patients and the influx of others from the Eastern States continues so great that the Public Health Service has been forced to transfer patients from Tucson, Ariz., and other western hospitals to sanatoriums near Asheville, N. C., and elsewhere in the East.

Many ill-advised patients have of late thronged to Tucson, unmindful of the fact that every hospital bed in that place is filled and every hotel and boarding house overcrowded. More than 500 tuberculosis subjects in Tucson are unable to find entrance to a sanatorium. Other towns in the Southwest report similar conditions.

Surgeon-General Cumming again renews his warning against tuberculosis patients leaving sections where the Government is able and willing to care for them and going to the Southwest on their own initiative.

PUBLIC HEALTH SERVICE INSTITUTE.—The nature of the attendance at the institute of the Public Health Service on venereal disease control, recently held in Washington, furnishes striking evidence of the fact that modern warfare on disease is not exclusively nor even chiefly medical. Prevention, in disease as in everything else, is now considered even more important than treatment; and prevention is very largely a social problem, in solving which every class of the community has its part. Thus, the institute, which conducted two weeks' intensive training for 511 medical men and women and social workers, who had come from all parts of the continent to familiarize themselves with the recent marvellous advances in both the medical and the social aspects of the twin diseases, had among its students more than a hundred physicians of high standing, 48 directors of clinics, 47 nurses, 22 police women, 15 educators, and about 50 national, state and city health officers, editors, travellers'-aid secretaries, athletic directors, Y. M. C. A. secretaries, and representatives of other important social agencies.

UNIVERSITY OF CINCINNATI MEDICAL SCHOOL.—A gift of $700,000 has been offered by the General Education Board of New York to the Medical College of the University of Cincinnati on condition that there be raised an additional sum of $1,300,000 to complete the $2,000,000 endowment fund of the college. There has been subscribed to this amount $900,000.

This year marks the one hundredth anniversary of the founding of the Medical College. One hundred years ago, the Medical College of Ohio received its charter from the state—the first medical school established west of the Alleghanies and the third oldest in the country. Dr. Daniel Drake was the first president of the college, which was then called the Medical College of Ohio. The first class of twenty-four students was graduated in 1821. In 1896 the college became the medical department of the University of Cincinnati, and in 1909 the Miami Medical College also became a part of the University. The building of the present medical college and the city hospital was largely the achievement of Dr. Christian R. Holmes. At the exercises held in celebration of the centenary of the Medical College on November 6, 1910, a historical sketch of the college was given by Dr. J. C. Oliver; Dr. William T. Sedgwick, of the Massachusetts Institute of Technology, spoke on the relationship of medicine to public health; and Dr. Joseph Ransohoff reviewed the work of Drake and Holmes and other teachers in the college.

Resignation of Dr. D. R. Hooker.—In order to engage entirely in research work, Dr. D. R. Hooker has resigned his position as associate professor of physiology in the Johns Hopkins Medical School.

Absence of Prof. C.-E. A. Winslow.—In order that he may assume the directorship of the public health activities of the League of the Red Cross Societies at Geneva, leave of absence has been granted by the Yale University School of Medicine to Prof. C.-E. A. Winslow. He will be in Europe during the spring term, and will return to New Haven for the opening of the fall term in October, 1921.

International Congress of Comparative Pathology.—At the second International Congress of Comparative Pathology which will be held at Rome in April, 1921, the subjects discussed will include influenza in man and animals, foot-and-mouth disease, recent researches in sarcoma and carcinoma, rabies and anti-rabic vaccination, piroplasmosis, acari and scabies in man and animals, and phylloxera. Under the presidency of Professor Perroncito, an organizing committee has been established, composed of Professors Ascoli, Golgi, Grassi, Lustig, Marchiafava, Paterno, Raffaele, Sanarelli, and Colonel Bertoletti.

Opportunities for Dietitians.—Opportunities are now open in the hospitals of the U. S. Public Health Service for the employment of dietitians of many women graduates of schools of Household Economics who have had student training or hospital experience in civilian or army hospitals. The work was transferred a year ago from the pharmacists to a newly established dietitian service. The section has steadily expanded, but owing to the opening of many new hospitals and the enlargement of those already in operation, the dietetic personnel is not equal to the requirements. Applications for appointment should be made to the Surgeon General, U. S. Public Health Service, Washington, D. C.

New Public Health Service Film.—A new motion picture film prepared for the U. S. Public Health Service, vividly presents the life history of the mosquito, especially of the kind that transmits malaria germs and costs the United States people about $200,000 a year by so doing. The views show how the female mosquito absorbs the malaria germs with the blood of a malaria patient; how the germs increase and multiply and pervade the salivary glands of the mosquito; and how the mosquito passes them on. The film was exhibited for the first time at the meeting of the Southern Medical Association at Louisville, Kentucky, November 15 to 18.

Public Health Service and Tuberculosis.—The migration of army patients suffering with tuberculosis to the semi-arid West is causing the U. S. Public Health Service no little concern, for all the service hospitals and all the contract hospitals in that region are now completely filled. It is considered to be very unfortunate that the patients should leave places where the Government is ready and able to care for them and go to other sections where it is absolutely impossible for it to provide care and where even ordinary housing accommodations are often unobtainable. The service is making and will continue to make every effort to meet the needs of the patients, but the great amount of migration to that part of the country makes the problem very serious.

Investigation of European Immigration.—Surgeon J. W. Kerr, of the U. S. Public Health Service, sailed for Europe on November 20 with Commissioner General of Immigration Caminetti, to assist in the investigation of emigrant conditions in Europe. The hope is to devise additional measures whereby the immigration laws may be given greater force and may yet work less hardship on prospective emigrants.

Pellagra and Poverty.—That pellagra varies inversely with the family income in the cotton-mill villages of South Carolina is the conclusion drawn after a three-year study of the U. S. Public Health Service. This is the first reported study in which the long-suspected relation of poverty and pellagra is definitely measured. It was found that as the income fell the disease increased and affected more and more other members of the same family. As the income rose, the disease decreased and was rarely found in families of even moderate means.

Differences among families with the same incomes are attributed by the report to differences in the expenditures for food, intelligence of the housewife, and ownership of cows and gardens. Differences among villages which were economically similar are attributed to differences in the availability and condition of food in local markets.

A recent statement of one of the largest life insurance companies in the United States indicates that the food standards of Southern wage-earners must have improved remarkably of late, for the death rate from pellagra has fallen from 6.7 per 100,000 in 1915 to 2.3 in 1919.

Chaulmoogra Oil and Tuberculosis.—The recent widely circulated statement that the U. S. Public Health had found that chaulmoogra oil was efficacious in the treatment of tuberculosis as it had been shown to be in that of leprosy, is said by Surgeon General Cumming to be unwarranted. Experiments made some years ago with the oil gave no definite results. Recent experiments with the ester, or derivatives, have been begun because of hopes based on some similarities between the bacilli of leprosy and those of tuberculosis; but these have not proceeded far enough to indicate what results will be obtained.

College of Medicine of St. Louis University.—Announcement has been made by the president of St. Louis University that Dr. John Auer, pharmacologist of the Rockefeller Institute of New York, has been appointed to institute and conduct a Department of Pharmacology in the College of Medicine of the University. It is the hope of the faculty of the University to be able, through the Centennial Endowment Fund of $3,000,000 now being raised by the friends and alumni of the institution, to establish complete departments in every line of medical instruction and research. It is also intended, if possible, to secure as heads of these departments men of professional standing equal to that of Dr. Auer, who has been connected with the Rockefeller Institute since its organization in 1903.

Need of More Hospitals.—In an annual report, it has been recommended by Dr. Hugh S. Cumming, surgeon-general of the Public Health Service, that additional hospital facilities be provided for the treatment of former service men and women. The report points out that 20,000 patients were receiving hospital care from the Public Health Service on last July 1 as compared with 2,000 in October, 1919.

"The Public Health Service reiterates its firm belief that an adequate hospital construction program should be undertaken by the National Government for the care of ex-service men and women. It is repeated that the special needs to be met are those of ex-service men and women suffering from tuberculosis and mental disorders. These groups of patients will require treatment for long periods of time and their demand is for care and treatment in governmental institutions."

British Reports of Conditions in India.—*The British Medical Journal* has called attention to the fact that in Bengal the rate of infant mortality runs as high as 30 per cent. in some districts, and is nowhere less than 20 per cent. The problem is one of great difficulty. Throughout the province good milk is dear and the people poor, mothers are ill-nourished, and trained *dhais* (mid-wives) rare. Poverty is at the bottom of most of this enormous waste of infant life, and social and economic conditions hamper the introduction of remedial measures.

A recent statement shows that in market week cholera was responsible for 724 deaths in Behar and Orissa, 570 in Madras, 213 in Bombay. Plague accounted for 433 deaths in Madras, and 175 in the Central Provinces. The total number of deaths from cholera was 1,800; 200 from smallpox, and 1,700 from plague.

A certain number of wandering lepers are reported to be in Lucknow. To facilitate their confinement in the Lucknow Leper Asylum, grants have recently been made to the asylum authorities. The general policy of the British Government on the subject of leper segregation is at present under consideration in view of the recent passing of the Lepers (Amendment) Act XXII of 1920.

BOSTON AND MASSACHUSETTS.

New England Hospital for Women and Children.—From 1863, when the Hospital was incorporated, until 1872, all departments were carried on together. In 1872, the Hospital was removed to its present location in Roxbury, but the out-patient work, both clinics and home care, was continued at the old site on Warrenton street, and later at 29 Fayette street. To quote from our records of that date, "Owing to the distance of the new building from the crowded part of the city where the poor people reside, the dispensary was kept in the city proper." With the growth of the city and the present facilities for reaching the Hospital by several lines of cars, both surface and elevated, this reason no longer exists, and on January 1, 1921, the Out-Patient Department was transferred to the hospital plant, where the clinics are continued as usual, and medical and nursing service furnished to poor patients in their homes.

Berkshire School for Crippled Children.—By the will of the late Hon. W. Murray Crane of Dalton, the Berkshire School for Crippled Children, Pittsfield, Massachusetts, has been left fifty thousand dollars, to be used by direction of the trustees.

Graduating Exercises of Training School for Nurses.—The graduating exercises of the Training School for Nurses of the Massachusetts General Hospital were held on the evening of January 11 in the Moseley Memorial Building. An address was delivered by Reverend Henry K. Sherrill. The exercises were followed by a reception.

Funds for Hospital in Wayland.—In the will of the late Jonathan M. Parmenter of Wayland, provision was made for the sum of one hundred thousand dollars and an equal sum in bonds and stocks, to be used in establishing a hospital in Wayland or in its immediate vicinity.

Week's Death Rate in Boston.—During the week ending January 29, 1921, the number of deaths reported was 217 against 306 last year, with a rate of 14.93 against 19.74 last year. There were 32 deaths under one year of age against 54 last year.

The number of cases of principal reportable diseases were: Diphtheria, 73; scarlet fever, 51; measles, 70; whooping cough, 18; typhoid fever, 1; tuberculosis, 50.

Included in the above, were the following cases of non-residents: Diphtheria, 14; scarlet fever, 3; measles, 1; tuberculosis, 6.

Total deaths from these diseases were: Diphtheria, 4; measles, 1; whooping cough, 1; typhoid fever, 1; tuberculosis, 14.

Included in the above, were the following non-residents: Tuberculosis, 2.

Miscellany.

SOCIETY NOTICES.

Beth Israel Hospital.—There will be a clinical meeting in the auditorium of the Beth Israel Hospital on Wednesday evening, February 9, at 8.15.

Program

Chronic Pancreatitis. Dr. Daniel F. Jones.
Discussion. Dr. John T. Bottomley and Dr. Roger I. Lee.

Physicians are cordially invited. The telephone is Roxbury 5940 and visitors may be on call.

Refreshments will be served.

Committee on Clinical Meetings,
Albert Ehrenfried, M.D.
Ward H. Cook, M.D.
E. Grenville Crabtree, M.D., *Sec.*

Harvard Medical Society.—Next meeting in the Peter Bent Brigham Hospital Amphitheatre (Van Dyke Street entrance), Tuesday evening, February 15, at 8.15 o'clock.

Program

Medicine in Continental Philadelphia as Depicted in the Diary of Elizabeth Drinker. 1749-1807.
Drs. C. K. and Katherine R. Drinker.

Medical students and physicians are cordially invited to attend.

Cyrus C. Sturgis, *Secretary.*

East Boston Medical Society.—Dr. Richard C. Cabot will address the East Boston Medical Society on February 28, at 8 p.m., in Walcott Hall, Central Square, East Boston. His subject will be "Diseases of the Heart." Members of the profession are invited to attend.

Ernest L. Booth, M.D., *Secretary.*

RECENT DEATHS.

Dr. James Edmund Sullivan died at his home in Providence, R. I., October 8, 1920. He was a graduate of the Bellevue Hospital Medical College in 1879, joined the Massachusetts Medical Society in 1883 and moved to Providence in 1889, retaining membership in the Massachusetts State Society.

Dr. Michael Edward Kean died at his home in Manchester, N. H., September 22, 1920, aged 57. He was born at Bedford, N. H., June 28, 1863, and was a graduate of Dartmouth Medical School in the class of 1889, joined the Massachusetts Medical Society in that year and soon settled in Manchester, keeping up his membership in the society until his death.

Dr. Edward Henry Bushnell of Quincy died at the United States Public Health Service Hospital, Parker Hill, Roxbury, January 23, 1921, aged 55 years. He was a graduate of the University of Vermont, Medical Department, in 1889, joined the Massachusetts Medical Society and settled in Quincy in 1901. At the time of his death, Dr. Bushnell was president of the Norfolk South District Medical Society. He was a Mason and is survived by one daughter. While in the Medical Corps of the Army he held the rank of captain.

Dr. Louis Allen Crocker died of "acute indigestion" at his home in Brewster, January 8, 1921, aged 57 years. He was born in Brewster, January 10, 1863, was educated at the town school, the Bridgewater normal school and at Brown University, where he took a Ph.B. in 1898. His M.D. was received at Harvard Medical School in 1902. After serving for a year as superintendent of Channing Hospital at Providence he settled in Brewster and joined the Massachusetts Medical Society. His widow, Hannah H. Knowles, who survives him, had no children.